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BOSTON SOCIETY OF CIVIL ENGINEERS
FOUNDED 1848

PROCEEDINGS

PAPERS IN THIS NUMBER.

"The Movement to establish a National Department of Public Works." Frederic H. Fay.

Memoir of Deceased Member.

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Contributors are hereby notified that proof will not be submitted to them for examination unless requested before the 10th of the month preceding the month of publication.

MINUTES OF MEETINGS.

BOSTON, May 21, 1919. — A regular meeting of the Boston Society of Civil Engineers was held this evening in Chipman Hall, Tremont Temple, and was called to order at 7.50 o'clock by the President, Leonard Metcalf.

The attendance at the meeting was 90, including members of the Boston Section of the American Society of Mechanical Engineers and members of the New England Water Works Association, who had been invited to join in the meeting.

The reading of the record of the last meeting was dispensed with, and it was approved as printed in the May JOURNAL.

The Secretary reported for the Board of Government the election to membership of the following:

As a Member — Mr. James E. Cashman.

As a Junior — Mr. Elmer P. Rankin.

The Secretary also reported the adoption by the Board of the following vote:

That the Board of Government of the Boston Society of Civil Engineers heartily approves the movement for the establishment of a National Department of Public Works, and recommends that the Society actively support the project through appropriate campaign committees appointed by the Board, and coöperation with the committees of other professional and business organizations that may become interested in the movement.

At the suggestion of the President, action on the recommendation of the Board was postponed until later, so that members might have the benefit of the evening's discussion on the subject. Before the close of the meeting, on motion of Mr. Wason it was unanimously voted:

That the meeting approve the action of the Board of Government of the Boston Society of Civil Engineers upon the matter of a National Department of Public Works as expressed in the foregoing vote.

The Secretary presented the memoir of Rufus M. Whittet, a member of the Society, who died December 10, 1918, which memoir was prepared by a committee consisting of Messrs. X. Henry Goodnough and John J. Van Valkenburgh, and by vote it was accepted and ordered printed in the JOURNAL.

The death of John A. Gould, a member of the Society, which occurred May 18, 1919, was announced, and by vote the President was requested to appoint a committee to prepare a memoir. The President has named, as the committee, Messrs. Desmond FitzGerald and William A. Wood.

It was voted to hold the next regular meeting on June 25, 1919, in connection with a joint outing of the New England Water Works Association and this Society.

The Secretary reported that a portrait in oil, suitably framed, of John Harrison Blake, the first Secretary of the Society in 1848 and 1849, had been presented to the Society by the estate of his son, Dr. Clarence J. Blake, and that the Board of Government had made fitting acknowledgment of the gift.

The President then extended a most cordial welcome to the members of the local section of the American Society of Mechanical Engineers. He said that it was very desirable and pleasant for engineers to get together from time to time in this way, in order to discuss movements in which all are interested.

"The particular subject for discussion to-night," he said, "is the movement instituted by Engineering Council, for the establishment of a National Department of Public Works, to have charge of the construction activities of the Government. The Society sent as its representative to the conference called to meet at Chicago on April 23-25, a past president of this Society, Mr. Frederic H. Fay, who will make report to you to-night."

Mr. Fay then read his report, which is printed in this number of the JOURNAL.

The President then turned over the further conduct of the meeting to Mr. W. G. Starkweather, chairman of the Boston Section of the American Society of Mechanical Engineers, who in turn introduced the other speakers of the evening, Dr. Ira N. Hollis, a past president of both the American Society of Mechanical Engineers and the Boston Society of Civil Engineers; Mr. Walter B. Snow, a member of the Committee on Aims and Organization of the American Society of Mechanical Engineers; and Mr. Calvin W. Rice, secretary of that society. President Metcalf closed the speaking of the evening with especial reference to the question of civil *versus* military control of the National Department of Public Works.

A full report of the discussions had at this meeting is printed in this number of the JOURNAL.

Adjourned.

S. E. TINKHAM, *Secretary*.

BOSTON, MASS., May 7, 1919. — A special meeting of the Sanitary Section of the Boston Society of Civil Engineers was held this evening in the Society Library, Tremont Temple.

The meeting was called to order at 7.45 o'clock by the

chairman, Edgar S. Dorr. The records of the annual meeting were approved as printed in the JOURNAL.

The speaker of the evening, Prof. C. T. Brues, of Bussey Institute, gave a very interesting talk on "The Sanitary Control of Mosquitoes, Flies and Other Insects."

Professor Brues described the different insects, their life histories and their control, as viewed from the sanitary standpoint.

The talk was illustrated with lantern slides.

The subject was discussed by Messrs. Lewis M. Hastings, Leonard Metcalf, Edward Wright, Jr., and Frank A. Marston.

It was voted to extend a rising vote of thanks to Professor Brues for his courtesy in presenting the paper.

There were 26 present. Adjourned at 10.00 P.M.

JOHN P. WENTWORTH, *Clerk.*

APPLICATIONS FOR MEMBERSHIP.

[June 16, 1919.]

THE By-Laws provide that the Board of Government shall consider applications for membership with reference to the eligibility of each candidate for admission and shall determine the proper grade of membership to which he is entitled.

The Board must depend largely upon the members of the Society for the information which will enable it to arrive at a just conclusion. Every member is therefore urged to communicate promptly any facts in relation to the personal character or professional reputation and experience of the candidates which will assist the Board in its consideration. Communications relating to applicants are considered by the Board as strictly confidential.

The fact that applicants give the names of certain members as reference does not necessarily mean that such members endorse the candidate.

The Board of Government will not consider applications until the expiration of twenty (20) days from the date given.

FOX, WALTER SCOTT, Allston, Mass. (Age 24, b. Allston, Mass.) Graduate of Lowell Inst., 1916. From September, 1915, to August, 1916, draftsman with Stone & Webster; from August, 1916, to date, with exception of short time in military service, engineer with E. A. Tucker Co. Refers to H. A. Gray, E. A. Tucker, F. S. Wells and J. F. Wilber.

ROWE, RANSOM I., Brighton, Mass. (Age 52, b. Burlington, Vt.) Has been engaged in engineering work for over thirty years; during past sixteen years has been contractor on water works, roads, bridges and tunnels; is now president of Rowe Contracting Co. Refers to C. R. Gow, Channing Howard, E. S. Larned, H. A. Miller and J. R. Rablin.

VARNEY, EDWARD ALLEN, Cambridge, Mass. (Age 24, b. Orange, Mass.) Worcester Polytechnic Inst., 1912-16. During summer of 1912, with Union Twist Drill Co., Athol, inspection dept.; summer of 1913, with Associated Efficiency Engrs., New York City, on efficiency and cost work; summer of 1914, with Reed Prentice Co., Worcester, on mechanical drafting and filing work; summer of 1915, with Central Bldg. Co., Worcester, on Worcester Tech. gymnasium; from June, 1916, to November, 1917, structural detailer and designer with Eastern Bridge & Structural Co.; from December, 1916, to January, 1917, loaned to New England Structural Co.; from December, 1917, to March, 1918, draftsman and designer with Aberthaw Construction Co.; March 10, 1918, loaned to Fay, Spofford & Thorndike, work consisting of drafting, some design and checking on Boston Army Supply Base; from October, 1918, to date, asst. to head of Applied Mechanics and Strength of Materials Dept., Wentworth Inst. Refers to C. R. Berry, C. A. Farwell, F. H. Fay, H. F. Sawtelle, C. M. Spofford, H. C. Thomas and S. H. Thorndike.

EMPLOYMENT BUREAU.

THE Board of Government maintains an employment bureau for the Society, to be a medium for securing positions for its members and applicants for membership, and also for furnishing employees to members and others desiring men capable of filling responsible positions.

At the Society rooms two lists are kept on file, one of *positions available* and the other of *men available*, giving in each case detailed information in relation thereto.

MEN AVAILABLE.

459. Age 22. Graduate of Rindge Technical School and student for one year at George Washington University. Has had two years' experience in engineering work, including one year as structural draftsman with bridge

department of railroad. Desires position as structural draftsman. Salary desired, \$25 per week.

460. Age 27. Graduate of Mechanic Arts High School, Lowell Inst. (buildings course), and U. S. Navy Steam Engrg. School. Has had nine years' engineering experience, including topographical surveying and industrial and power-plant design and construction; experience covers both field and office work; since October, 1917, in U. S. Navy; recently released with rank of ensign. Desires position in any capacity for which above experience qualifies him.

461. Age 32. Graduate of Lowell Inst., mechanical and buildings courses; student for two years at Mass. Inst. of Technology. Has had four and one-half years' experience on general survey work for U. S. Engineer Office, three years as resident engineer in paper mill, two years as designer in office of consulting engineer; and one and one-half years as army officer; was member of Planning Board of General Staff in France; recently discharged with rank of captain. Desires executive position.

462. Age 28. Graduate of Mass. Inst. of Technology, sanitary engineering course. Experience covers two years in engineering division of state department of health; eleven months in Balkans as member of American Red Cross Sanitary Commission, on epidemic work, general sanitation and civilian relief; eight months on construction and operation of water-purification and sewage-disposal works in New York state; and one year in France as lieutenant of engineers on water-supply work. Desires position in connection with sanitation or public health. Salary desired, \$2,000 per year.

463. Age 20. Student for one year at Bentley's College and for one year at Wentworth Inst. Has had one year's experience as timekeeper and estimator. Desires position as timekeeper or material clerk. Salary desired, \$23 per week.

464. Age 20. Received technical education at Mechanic Arts High School and Wentworth Inst. Has had two and one-half years' experience, including six months as draftsman with engineering firm and one year on railroad work. Desires position as transitman or timekeeper. Salary desired, \$25 per week.

465. Age 29. Educated in public schools and at Boston Y. M. C. A. Evening School. Has had twelve years' experience as rodman, draftsman and transitman; experience includes municipal work and railroad location and construction; for four years has conducted own office. Desires position as surveyor. Salary desired, \$150 per month.

466. Age 30. Graduate of Mass. Inst. of Technology, civil engineering course. Has had about seven years' experience, chiefly on building construction; has had responsible charge of important concrete construction, including work as assistant engineer, construction engineer and superintendent of construction for Construction Div., U. S. A. Desires permanent position as assistant superintendent on construction or maintenance, preferably in or near New England. Salary desired, \$200 per month.

NOTES FROM ENGINEERING COUNCIL.

It is proposed to print in this place from time to time notes from ENGINEERING COUNCIL, which is a department of the United Engineering Society.

On this Council each founder society has five representatives, and United Engineering Society is represented by four of its trustees, one from each founder society, and the American Society for Testing Materials has one representative. Other national engineering or technical societies may be admitted to membership. Early this year the American Society for Testing Materials became the fifth member of Engineering Council. Admission of other than national societies is under consideration and has been recommended by Council.

ENGINEERING COUNCIL has defined its field in the following resolutions:

Whereas, the By-Laws of United Engineering Society stipulate that Engineering Council is to provide for convenient coöperation between engineering societies, "for the proper consideration of questions of general interest to engineers and to the public, and to provide the means for united action upon questions of common concern to engineers," and that "Council may speak *authoritatively* for all member societies on *all public questions* of common interest or concern to engineers, unless objection be made by a majority of the representatives present of one of the founder societies or by one quarter of the representatives present and voting,"

Resolved, that Engineering Council understands its field of activity to be approximately as follows:

(1) Council may deal with any matter of general interest for which joint action of two or more of its member societies would have been appropriate, if Council had not been established.

(2) Council may initiate and carry through projects of the general character defined in the By-Laws, for which the necessary financial provision has been made; but Council shall not undertake expenditures in excess of appropriations for its uses made by United Engineering Society on behalf of the founder societies and the contributions from other member societies, unless specific provision shall have been made therefor by subscription, donation or otherwise; moneys received by Engineering Council shall be turned into the treasury of United Engineering Society and disbursed by it, for the purposes designated.

(3) Council may take up, and in its discretion act upon, any matter

of general interest referred to it by any member society or by any other society, national, state or local, or by any branch of Government, or by any individual or group of individuals.

Resolved, that Engineering Council will as a rule avoid considering any matter which is specifically within the province of only one member society and not of others.

The nature of its activities may be illustrated by the following matters, to mention only a few, which have been taken up recently:

Its War Committee of Technical Societies embraced representatives of eleven technical organizations and was closely associated with the Naval Consulting Board and the Inventions Section of the Army General Staff. Of both these governmental bodies the chairman of the committee was a member. This committee assisted in reviewing 135 000 suggestions for military and naval devices and in stimulating the solution of war problems.

Provision for army field construction was proposed by a major of the British Transportation Service, by so organizing all fighting units as to have a definite proportion of engineers and construction foremen among the officers to direct the necessary construction at the front. After repeated conferences and extended correspondence, Council was assured that the need would be properly met in the American Army.

Advocates of an American Academy of Engineers were given several hearings and the matter was very carefully considered, but in the end Council declined to support the bill before the House of Representatives for the establishment of an academy.

In coöperation with the Chamber of Commerce, U. S. A., Council gave information about water power while bills were before Congress.

A Water Conservation Committee has been created, to deal broadly with questions concerning utilization and control of water in all parts of the country for municipal supply, power development, navigation, irrigation, sewage disposal, flood control and other purposes; to promote such consideration of water resources by Congress and legislatures as will result in conservation rather than unintelligent appropriation to a narrow

use at the expense of some more important use, also to encourage wise development.

A Committee on Licensing of Engineers was created at the beginning of the year, after long efforts to secure proper membership. The committee has fifteen members in thirteen different states, its chairman and two others being in Chicago. The country has been divided into thirteen districts, each assigned to one member of the committee, for the collection of information relating to present and proposed laws concerning the licensing of engineers and architects. This matter is receiving active attention by large numbers of engineers as well as the legislatures of several states. Because of common interest, the American Institute of Architects was recently invited to coöperate in seeking uniform legislation for engineers and architects in all the states.

Ten days after the armistice, Council organized Engineering Societies Employment Bureau. Since December 1, 1918, it has filled 2 500 applications for employment, has placed 500 engineers in positions, and has conducted hundreds of personal interviews. About 90 per cent. of the applicants are men returning from army, navy or other war service. Needs additional appropriation of \$6 000, making total for year \$13 500. No charge is made for this service, and it is open not only to members of the societies, but to non-members introduced by members. The service is appreciated, especially because of the discrimination and intelligence with which it is managed. It is conducted largely by personal interviews. Requests for men for many important engagements are coming to this office, as well as those for minor positions. The cost of this service for the current year is estimated at \$16 000, including salaries, offices and miscellaneous expenses.

In the closing month of 1918, Council created a National Service Committee, establishing it in an office in Washington, with a chairman and small staff engaged to give their time to work at the national capital for engineers in all parts of the country, including a bureau to supply on request information concerning congressional and departmental activities.

It aided in the reinstatement of 350 "subway" engineers unfairly dismissed January 1, 1919, by the City of New York.

Council has made repeated efforts to secure better classification and compensation of engineers in railroad employment.

On invitation, Council explained to a Senate Committee the possibilities of a National Department of Public Works.

Council, through its Washington office, opposed the Kenyon bill, giving the engineer corps of the army control over federal construction and over state and municipal work receiving federal aid. It did not pass.

National Service Committee conducted a conference in Chicago, April 23 to 25, to determine whether Engineering Council should advocate a National Department of Public Works. The conference was attended by representatives of organizations of engineers, architects, constructors, geologists and chemists, having membership of over 105 000. The conference organized for pursuing its purposes, and established several working committees.

Besides the usual Executive, Finance, Nominating and Rules committees, Engineering Council has the following committees whose suggestive names well indicate the breadth and character of the work carried on: Advisory Committee to the New York State Reconstruction Commission, Americanization, Classification and Compensation of Engineers, Curricula of Engineering Schools, Engineering Societies Employment Bureau, Fuel Conservation, International Affiliation of Engineers, Licensing of Engineers, National Service, Patents, Public Affairs, Publicity, Publicity Methods, Reconstruction, Water Conservation. These committees are active in accordance with the needs of their several fields. Several committees have been discontinued, their duties having been done.

To maintain some communication, although informal, with groups of engineers throughout the country, Engineering Council has approximately thirty-five local correspondents in as many centers of engineering population. Canadian engineers have repeatedly expressed desire for friendly relationships with Engineering Council, and at its meeting February 20, Council appointed three members of a joint committee on International

Affiliation of Engineers, to which the Engineering Institute of Canada also has appointed three members.

From the beginning of its existence, Engineering Council recognized the desirability of establishing at the national capital an office to represent the engineering profession. Ways and means for accomplishing this purpose did not appear until the end of 1918, when a National Service Committee of nine members was created. The members are distributed among several societies and located in many parts of the country, but the chairman is the Washington representative of Engineering Council and in charge of an office opened in January in the McLachlen Building, at Tenth and G streets.

The National Service Committee is to deal with matters of national legislation and work of the federal departments referred to it by Engineering Council. It will also maintain an information bureau for engineers, to answer inquiries regarding the reports and activities of the departments and matters before Congress. The following announcement (May 1) has just been issued:

ENGINEERING COUNCIL ANNOUNCES

a National Legislative and Departmental Information Service
for Engineers in All Branches of the Profession.

This service has been placed under engineering direction, so that responses to inquiries will be specific and suitable for engineering use. Engineering Council has established this service in response to frequent expressions of need. Its continuance will depend largely on its use by the engineers of the country. No charge will be made for such services as the committee can render.

The Statistical, Research and Construction bureaus of the Government have become valuable sources of engineering information, but have not been used by engineers to the extent merited by the character of their material. Many matters before Congress involve engineering considerations, of which members of the profession should be aware.

Set forth in specific language the kind of information wanted.

Address the National Service Committee, M. O. Leighton, chairman,
502 McLachlen Building, Washington, D. C.

LIBRARY NOTES.

RECENT ADDITIONS TO THE LIBRARY.

U. S. Government Reports.

Abstracts of Current Decisions on Mines and Mining, May to September, 1918. J. W. Thompson.

Accidents at Metallurgical Works in United States during Calendar Year 1917. Albert H. Fay.

Canning River Region, Northern Alaska. Ernest deK. Leffingwell.

Cobalt, Molybdenum, Nickel, Titanium, Tungsten, Radium, Uranium, and Vanadium in 1916. Frank L. Hess.

Contributions to Economic Geology, 1917: Part II. — Mineral Fuels. David White.

Contributions to Economic Geology, 1918: Part I. — Metals and Nonmetals except Fuels. F. L. Ransome and others.

Evening and Part-Time Schools in Textile Industry of Southern States. Federal Board for Vocational Education. 1919.

Farm Woodlands and the War. Henry S. Graves.

Geology and Ore Deposits of Tintic Mining District, Utah. Waldemar Lindgren and G. F. Loughlin.

(The) Gold Situation: Report of Joint Committee appointed from Bureau of Mines and Geological Survey.

National Lumber and Forest Policy. Henry S. Graves.

Natural Gas in 1916. John D. Northrop.

Natural-Gas Gasoline in 1917. John D. Northrop.

Notes on Lignite: Its Characteristics and Utilization. S. M. Darling.

Occupations in Navy Yards. Federal Board for Vocational Education. 1919.

Oil and Gas Geology of Birch Creek-Sun River Area, Northwestern Montana. Eugene Stebinger.

Our Mineral Supplies: Quicksilver. F. L. Ransome.

Results of Magnetic Observations Made by United States Coast and Geodetic Survey in 1918. Daniel L. Hazard.

Traps for Saving Gas at Oil Wells. W. R. Hamilton.

Water-Supply Paper 427: Bibliography and Index of Publi-

cations of United States Geological Survey relating to Ground Water. Oscar E. Meinzer.

State Reports.

New York. Annual Report of Public Service Commission for First District for 1917, Vol. I.

New York. Annual Report of State Engineer and Surveyor for 1916-17, 2 vols.

City and Town Reports.

Boston, Mass. The North End: Survey and Comprehensive Plan: Report of City Planning Board.

Brookline, Mass. Report of Town Engineer for 1918.

Concord, N. H. Annual Report of Water Commissioners for 1918.

Fall River, Mass. Annual Report of City Engineer for 1918.

Haverhill, Mass. Annual Report of Water Commissioners for 1918.

Northampton, Mass. Annual Report of Water Commissioners for 1918.

St. Paul, Minn. Annual Report of Water Commissioners for 1918.

Springfield, Mass. Annual Report of Water Commissioners for 1918.

Taunton, Mass. Annual Report of Water Commissioners for 1918.

Waltham, Mass. Annual Reports of All Departments for 1918, including First Annual Report of City Manager.

Waltham, Mass. Annual Reports of Street, Engineering, Water and Sewer Departments and Board of Survey for 1918.

Wellesley, Mass. Annual Reports of Water and Municipal Light Commissioners for 1918.

Woonsocket, R. I. Annual Report of Water Commissioners for 1918.

LIBRARY COMMITTEE.

BOSTON SOCIETY OF CIVIL ENGINEERSFOUNDED 1848

PAPERS AND DISCUSSIONS

This Society is not responsible for any statement made or opinion expressed in its publications

**THE MOVEMENT TO ESTABLISH A NATIONAL
DEPARTMENT OF PUBLIC WORKS.**

BY FREDERIC H. FAY,* PAST PRESIDENT BOSTON SOCIETY OF
CIVIL ENGINEERS:

(Presented May 21, 1919.)

MR. PRESIDENT, FELLOW MEMBERS AND MEMBERS OF THE BOSTON SECTION OF THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS, — The representative of the Boston Society of Civil Engineers is very glad of this opportunity to make his official report as the delegate of the Society to the conference in Chicago, called by the Engineering Council, to consider the movement for the establishment of a National Department of Public Works.

For over forty years the engineering profession has discussed the desirability of a National Department of Public Works manned by a permanent body of civilian engineers. So far, discussion has been abstract rather than concrete, and has failed to produce results. But the movement has gained strength at each recurrent period. The idea will not down; it is fundamentally right, and if carried out it will be of great benefit to

[NOTE. — This meeting was in the nature of a symposium presided over by Leonard Metcalf, President of the Society, and joined in by the Boston Section of the American Society of Mechanical Engineers. Further discussion is invited, to be received by W. L. Butcher, Editor, before September 10, 1919, for publication in a subsequent issue of the JOURNAL.]

* Of Fay, Spofford & Thorndike, Consulting Engineers, 308 Boylston Street, Boston, Mass.

the country. It is bound to succeed in time, but success will be reached only by crystallizing the idea in a congressional bill and enlisting in support of the bill the strongest kind of co-ordinated and coöperative effort.

A glimpse of the situation that exists to-day is given by Mr. J. Parke Channing, chairman of Engineering Council, in his opening address at the recent Chicago conference:

" Our Government has become the greatest industrial plant in all history, — investigating, surveying, building and operating, — and its various functions are being conducted with practical independence one with another, and with so little coördination and so complete a lack of common purpose that practically the only occasions when the various elements become conscious of each other is when they overlap and attempt to crowd each other off the map; that any private or corporate business conducted according to the methods of Government would speedily become bankrupt and would deserve such fate. There are twelve federal organizations engaged in making surveys, more than a score in chemical investigations, some of them competing and quarreling for preference under the same departmental roof. In the Congressional Directory there are listed twenty-nine bureaus and agencies of Government engaged in construction of one or another kind. Four Government departments are engaged in fuel tests, while four Government bureaus are maintaining coast fleets each independent of the other, in the same waters, and engaged in work that has so many points of contact that not one person in twenty realizes that they are separate. These are only a few illustrations of a condition which can be tolerated by no considerate person."

There is another argument, and a very sound one, in favor of establishing a National Department of Public Works, and that is the prospect of establishing a national budget system. The budget system is the only system under which an efficient administration of the financial affairs of a government can be obtained. The United States is the only country in the whole world, claiming to have a modern government, which does not make use of the budget system.

The unification of the engineering and construction activities of the Government in a single Department of Public Works would logically carry with it the introduction of modern budget

methods, at least so far as the activities of that department were concerned. In place of present congressional authorization by log-rolling methods, budgets could be carefully studied by the department and various projects considered in advance on their merits and in their relation to one another, so that in passing legislation concerning the department Congress could act with full knowledge of the facts. Legislation creating the Department of Public Works should provide for such departmental investigation before congressional action. In short, here is the opportunity to introduce modern business methods in one of the most important fields of Federal governmental activity.

The advantages to be gained by the country at large, through a National Department of Public Works are economical. First, there is the saving resulting from consolidation, due to the elimination of the present duplication and overlapping of activities in the various departments and bureaus. It is not expected that if the department is created it will mean at the start a radical reorganization of the various bureaus now conducting governmental engineering construction work, but that by bringing these bureaus together and by proceeding in a process of orderly development, by seeing that no two bureaus are trying to do the same work, and by the gradual process of evolution, there will be effected a very large and substantial saving in the cost of operating such a department. Second, great savings are possible by doing away with the "pork barrel" and adopting a policy of carrying out public works according to predetermined, well-studied and coördinated plans. The net result to the country, if this project is carried out, will be more value received for each dollar spent in the public works.

Incidentally there are possibilities of great benefits to the engineering and architectural profession by backing and putting through this movement. In the first place, there will be wider recognition, by the public, of the dignity and importance of governmental engineering work — and the word "engineering" is here used in its broadest sense. Successful administration of the department by an engineering personnel will add to the prestige of the engineer and architect. More general recognition of the worth of engineering service, with the consequent improve-

ment of the status of the engineer in government employ, will, we believe, be the outcome. At the present time many of the bureaus with engineering duties, conducting engineering or construction work, are so minor in the departments in which they are placed that they are greatly hampered in their activities and do not receive the appreciation and recognition justly due them. The combining of all under one head — and that head a Cabinet member who is himself trained in engineering and construction work, as contemplated also by this bill — will result in a great improvement in the status of the engineer in governmental service.

The time is ripe for action. In this period of readjustment following the war the public mind is turned towards problems of reconstruction and reorganization in all fields of activities, private and governmental. Shortcomings of existing machinery of the National Government have been laid bare by stress of war. Congress is alive to the necessity for changes and improvements, and at this present session much time will be spent in a consideration of problems of reorganization of the governmental activities. The congressional mind is now receptive to sound and meritorious suggestions.

The engineer has played an important part in winning the war and has done his work well. As a result of the war the engineering profession has taken an immense forward stride in the public estimation. Now that the war is won there is open to the engineering profession an even greater opportunity for service in peace time in participating in the reorganization and readjustment of our national affairs. The public mind to-day is receptive to and awaits sound constructive suggestion. With the new prestige which the engineering profession has attained, a meritorious proposition like this, with a solid engineering backing, has bright prospects of success.

The present movement for a National Department of Public Works was started by Engineering Council during the past winter.

Engineering Council, as you know, is an organization representing the four national societies of civil, mechanical, mining, and electrical engineers, and more recently the American Society

for Testing Materials. Engineering Council has recently set up a committee known as the "National Service Committee," with headquarters in Washington; with permanent office and personnel; with the object of serving engineers by giving them information regarding governmental activities and getting for them data which may be desired from the files in the archives in Washington. But the chief work of the National Service Committee of the Engineering Council is the furthering of this project for a National Department of Public Works. After passing resolutions, this winter, endorsing the project, Engineering Council sent out invitations to engineering and architectural societies throughout the country, and to certain contractors' organizations, asking them to send representatives to a conference to be held in Chicago, April 23-25. This conference was broadly representative of the professional organizations of the entire country. The attendance included 71 delegates representing 74 engineering, architectural and contracting organizations, and in addition there were present 7 members of Engineering Council and 3 members of the National Service Committee of Engineering Council, who were given the privilege of the floor, but without the right to vote. The delegates came from all over the country, — San Francisco on the west, Duluth on the north, New Orleans on the south and Boston on the east, and from places all the way between. The convention of three days was held in the rooms of the Western Society of Engineers, and that society extended most generous hospitality. The convention was given every facility of the society quarters and on one evening the delegates were entertained at a banquet at the Chicago Athletic Club.

The convention was called to order, on the morning of the first day, by Mr. J. Parke Channing, chairman of Engineering Council, who briefly outlined the purpose of the conference and the general reasons why engineers urge the formation of a federal Department of Public Works, and he made it clear that Engineering Council was merely the agency through which the conference had been called together and that Council had no desire to be a determining factor in the conclusions reached.

Organization was effected by the election of Mr. M. O. Leighton, chairman of the National Service Committee, as chair-

man of the convention, and Mr. E. S. Nethercutt, secretary of the Western Society of Civil Engineers, as secretary of the convention.

From the outset the delegates were unanimous in the belief in the desirability of a National Department of Public Works. As soon as organization was effected, the time of the first session was given to a consideration of the general project and to the underlying principles of such a department. General sentiment was in favor of including only those services and bureaus whose work is chiefly of an engineering character. Differentiation was also made between engineering work of a military and of a civil character. The result of this morning's discussion was embodied in the following resolution:

"This conference of the delegates from engineering and related organizations respectfully recommends to the public and to the Congress, that legislation be enacted covering the following principles:

"1. That the services and bureaus of the National Government, having to do chiefly with matters of engineering and architecture, be grouped in one department to be known as the Department of Public Works.

"2. That the Department of Public Works comprise those works which are built and operated for the use of the public.

"3. That the Department of Public Works be made available when desirable for the performance of special engineering and architectural work for the use of other Government bureaus.

"4. That there be a systematic classification and organization of engineers, architects and other employees whose status shall be such that they may be recruited and maintained on merit."

Having adopted these general principles, the afternoon session of the first day of the conference was devoted to—

(a) The federal bureaus or activities which should be included in a Department of Public Works.

(b) Whether the effort should be made to secure an additional cabinet office or make over one of the present departments by redistribution of activities.

(c) Whether the present effort shall be to reorganize engineering bureaus completely, or merely to bring such bureaus under a single head, so that such rearrangement of functions as

is found desirable may be made gradually and as a result of experience and mutual deliberation.

As a result of this discussion the Committee on Government Engineering Activities brought in next day the following report, which was unanimously adopted:

"Your committee charged with a consideration of the question which Government activities should be coördinated in a National Department of Public Works, recommends:

"1. That the establishment of a National Department of Public Works should be accomplished by grouping those Government bureaus, services, commissions and other activities whose functions are predominately of an engineering or architectural character, in what is now the Department of the Interior, and thereafter designating that department 'The Department of Public Works.'

"2. That the transfer of any bureau, service or commission from any other department to a Department of Public Works should be accomplished without change of personnel, compensation and general plan of organization, leaving the coördination of the several activities, the simplification of organization and the establishment of additional bureaus, such for example as a bureau of chemical engineering, to be effected as the need for the same may from time to time become apparent.

"3. That in transferring river and harbor work and other work non-military in character, but now in charge of the Engineer Corps of the United States Army, to a Department of Public Works, the relation of the army engineers to such work be not changed and that there should be no relinquishment of non-military duty by the army engineers now on such duty until transfer of these engineers to military duty can be made without detriment to the public interests.

"Your committee finds that among the bureaus, services and activities, which logically belong to a Department of Public Works, are the following:

A Bureau of Public Roads.

The United States Reclamation Service.

The Alaskan Engineering Commission.

The Construction Division of the U. S. Army.

A Bureau of River, Harbor and Canal Work, including such functions as are now exercised by the Mississippi River Commission and the California Débris Commission.

A Bureau of Architecture.

A Bureau of Surveys, including the Coast and Geodetic Survey.

A Bureau of Mines.

The Geological Survey.

The Forest Service — at least until the same is divorced from the supervision of water-powers and road building.

The Bureau of Standards.

"Your committee believes that it would be unwise to determine at this time to what extent the proposed Department of Public Works should control the engineering activities of the General Land Office; of the National Park Service; of the Bureau of Lighthouses, of the Bureau of Indian Affairs, and of the Public Health Service and of various commissions, such as Commissions on Buildings and Grounds, and therefore suggests that such matters may well be deferred for consideration to a later date, preferably until the department has been organized."

Considerable time was then given to the means to be employed in pushing legislation and in financing the campaign. The necessity for permanent organization was evident, and such organization was effected by the conference in the following resolution:

"Resolved, that this conference be known as the ENGINEERS, ARCHITECTS AND CONSTRUCTORS CONFERENCE ON NATIONAL PUBLIC WORKS; that it continue in existence until dissolved by its own action, and that its officers and committees be empowered to further the organization and development of a National Department of Public Works."

Having passed this resolution providing for permanent organization, the conference then adopted as its machinery of permanent organization three committees, as follows:

1. An executive committee which was empowered to appoint a finance committee and also to add to its own membership and to the membership of other committees;
2. A committee on the text of bill, to which is entrusted the duty of drafting the bill which shall be introduced into Congress, as soon as possible in the present special session; and
3. A campaign committee.

The campaign committee is charged with the duty of giving publicity to the movement, — of pushing it in all parts of the

country, enlisting the support of as many organizations and agencies as may be obtained, and generally seeing to it that the campaign is properly organized and is pushed in an effective, systematic and well coördinated manner.

In this locality we have certain work to do. In the first place, we must conduct a campaign of education of the public and especially of members of Congress. We must organize local subcommittees of the campaign committee, in all parts of each New England state. The papers in the home town of every New England congressman should be filled with more or less information regarding the Public Works Department, and suitable editorials should be published regarding it. We must stimulate public interest through enlisting the active and hearty support of engineering and architectural societies, contracting and building organizations, Chambers of Commerce, the Associated Industries of Massachusetts, Rotary Clubs, and many other organizations. We must gain publicity for the movement through press notices about the bill; through meetings to be held; and through editorial comment. Ammunition in the form of material for argument and discussion of the bill will be supplied through the central committee at Washington, whose headquarters will be that of the National Service Committee of Engineering Council, in the McLachlen Building, Tenth and G Streets, N. W. It may be said here that Mr. Leighton, chairman of the National Service Committee, is also chairman of the Executive Committee and chairman *ex officio* of each of the other two committees, — so that he will be the effective head of the whole movement.

Engineering and architectural organizations need not expect to put this movement through by their own unaided efforts; rather, they must be the leaven to start a movement which through obvious merit and soundness will spread throughout the country.

The opportunity is now before us professional men to be of inestimable service to the public at large, and, by rendering this service to add to the prestige of our profession. If we can rise to this opportunity which is now given us, get beyond the technicalities of our professional work and look to the needs of

the country as we see them, and exercise our special knowledge and training and abilities, solving the particular problems which now are awaiting solution in governmental activities, we can put the engineering profession far ahead of its present status in the public mind; we shall prove that the engineer can, in the broadest sense, be of real service to the country. At the same time this will do more than anything else to enhance the importance of the engineer and secure for him the recognition which he deserves.

DISCUSSION.

DR. IRA N. HOLLIS.* — I am very glad to say a word in continuance of what Mr. Fay has said to you. I find it rather difficult to get to meetings of the Boston Society of Civil Engineers, of which I am proud to be a member and prouder still to have been a past-president. But Worcester is my problem now, and one which has kept me so closely at work for the past three or four months that I am lucky to be able to leave to-day.

We have established a bureau for returned soldiers and sailors there. I have gone into everything of that nature, because I think engineers ought to be represented in public work of any kind, and this bureau has given me a satisfaction such as I could not have found in anything else, as I see these boys coming back from the other side. I have found not only pleasure but some amusement in the work, and some insight into the working of the minds of engineers who have come back from France. I am going to digress a little in order to tell you my very first experience in the employment of returning soldiers, sailors and war-workers. In the beginning it was called a bureau for all three of these. I think that when the Department of Labor put in the word "war-workers" the officials little knew the consequence, because a great many people are called war-workers who gave up their jobs in order to do government work at very much higher wages, and they came to claim privileges on that account. The first who presented herself was a woman who had ceased to be a war-worker. She told me she wanted to get back into her old position. When I asked her what that was

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she said, why, she had been a cook. She had gone into the American Steel and Wire Company because she could get four times the wages there that she had received as cook. I asked where she used to work. She said, "11 Boynton Street." "Why," I said, "that is my house." "Yes," she said; "I used to be your cook." I told her that I would see about getting her back on the job, but I felt entirely cured of anxiety for war-workers.

We have much to go through during the next few years, in getting back to our work. Hundreds of men have come to the city of Worcester at exactly the same time, wanting to get back on the old jobs, when either the old job had disappeared or the organization necessary to run it had gone.

There is a certain side of the returned soldier and sailor which we ought to consider and bring to the attention of employers everywhere. We must have patience, especially with boys who have been across the ocean and are now passing through a period of reaction. Many employers in Worcester have said to me, "The men are not good for anything. They don't want to work." I think hundreds of them are half asleep, — in a state of disgust and weariness from what they have been through on the battleline. Now, we have thousands of these men coming back, and because they are loath to go to work immediately is no sign that they will not be good in the future. Consequently I have appealed to manufacturers to have patience with these men until they settle down.

I went West with the same hesitation because I had other things to do — but I certainly got some profit from that meeting in Chicago. I believe that the engineers of this country will eventually assist in what is known as the budget system in Washington, and perhaps have a strong influence in bringing the country out of that chaotic state we have been familiar with during the past two years. I therefore approach this subject of the establishment of a National Department of Public Works with an absolute conviction that it must be carried through. There may be obstacles on account of the fact that whenever a Government bureau is formed, every man in it holds on to his position as his birthright, and we certainly shall find great diffi-

culty in breaking up the vested rights of an outworn political system and in adjusting ourselves to conditions that now prevail in Washington. It may be a good many years before the project is put through. I hope not. Nevertheless I have full belief that it is an absolutely necessary change in our administration in Washington, and in the business of carrying on public works of all kinds. In spite of the intense opposition which I feel sure we shall meet in putting some Government work — for instance, the rivers and harbors — under civilian direction, we must nevertheless fight it out for the good of this country and for the good of the civilian engineer.

It has seemed to me, however, that there is something that must precede the formation of a Department of Public Works, and that is the better organization of the engineers in the United States. Have we gone far enough with that? I have watched during the past three years, with a great deal of interest, the formation of committees of all kinds, made up of men principally from the four larger societies, and the organization of many new societies. The difference of opinion that has seemed to exist strikes me at times as creating an impossible situation for the engineer. In other words, we've got to learn to work together better than we have in the past.

There was formed about three years ago — and I had some hand in it — a committee on standardization. We had in the American Society of Mechanical Engineers a very good standardization committee. The Electrical Engineers, the Civil and the Locomotive Engineers, all had similar committees, — all good standardization committees, — and yet when we attempted to select some members from each one and fuse them together into one great standardization committee for the United States, to take care of that which is vital to all commercial life and vital to trade at large, we found no end of difficulty and misunderstanding. They have spent three years in talking over organization, because there are so many points of difference in their ideas as to the way the thing ought to be done and the way the various engineers can be brought together. I do not believe, however, that there is any real difference. They all recognize well enough that they belong to a great profession upon which the prosperity

of this country is absolutely dependent, yet nothing great has been accomplished. Why? Because, the societies have not worked together.

I repeated here some years ago a remark made by President Eliot before I left Harvard. In a conversation about the tariff system of the United States he said, "The tariff must eventually be determined by engineers." I firmly believe that it is true. Now, it has seemed to me that in connection with our country and the development of things in our professions, each individual society has a field of its own which probably will never disappear. I take the view that I can fairly represent here to-night the American Society of Mechanical Engineers. What was it founded for? It was founded as an educational society to enable its members to perform their service better. That is the fundamental purpose of each one of these national societies. The civil engineers have had the best of this for the simple reason that they have less of the commercial element, as they have represented to a greater extent than the other societies the public works of the country. There is very little of the commercial in it, so far as the papers which have been read. Nevertheless, every one of these societies is fundamentally an educational society for the training of its own members to do better work, and to inform them of what is going on in their own particular branch of the profession. I hope that will never be departed from, for it would be a mistake to lose that element.

Is there room for something more? I asked those in the office in New York to give me a survey of the activities of the American Society of Mechanical Engineers during its history. This was too large an order, but they have worked out a résumé of the activities of the society for the past ten years and have gone into considerable detail as to the number of papers on technical subjects, general subjects, and public welfare. I should say from an analysis of the activities of the society that we have lost practically nothing during this progressive period in the educational features of the society. The papers are quite as good as anything we have ever done before, — perhaps not quite so fresh, but it is difficult to get anything fresh now. Nevertheless, carrying through all this time, the same educational feature

is apparent. That study has convinced me that there is room in the United States for a better consideration of public questions generally, in which all engineers ought to take part. There are no social problems that do not affect civil, mining, mechanical and other engineers. What is the organization which will enable us as engineers and professional men to take over those activities that do not naturally belong to the educational engineering association? I think the Engineering Council opens the way to something better. It was planned and started several years ago under the four large societies, and this with great difficulty. I was present at all the meetings and heard the discussions, and the best we could do was to settle upon by-laws for the consideration of questions referred to the Council by one of the founder societies. The decisions had to be unanimous and in many cases referred back for approval by every governing board. It was all a compromise, leaving much to be desired. At present it is too circumscribed, yet the experience has convinced me that all societies and engineers may be brought together in some kind of a senate, council or united society for all public and for some technical questions. We started in the Engineering Council by specifying that only national societies should be admitted to membership, and every member should be approved by the founders, thus keeping the control entirely in the hands of the four original societies, — but just recently a resolution has been proposed that the word "national" be struck out and that local societies be eligible, the Boston Society of Civil Engineers as well. It was a shock to me to have a set of by-laws approved by that association that would overlook one of the oldest and best organizations in America simply because it had the word "Boston" before it.

We have taken this step so that if the recommendation is accepted within a year we shall have it in our power to call to the Council the local societies all over the United States, thus bringing together the same kind of coördination as was found at the Chicago conference.

I was not a member of the conference when I went to Chicago and therefore had no vote and little right to talk, but I enjoyed listening. I felt a great deal encouraged by this movement

toward better organization for promoting efforts of a public nature. I am not speaking of the educational feature which belongs to every member society. I would not take from any society its characteristics, but rather join them all so that we may act together and iron out our differences before we put up any proposition to the central government of the United States. Any proposal to establish a Department of Public Works, which is not backed by the confidence that results from complete coöperation to our full strength, is doomed to failure.

We can accomplish nothing unless we work together. This leads me to say one other thing, — about another feature of this subject on which I have been thinking a great deal. Two years ago or more, when I was president of the American Society of Mechanical Engineers, I started out to talk to the engineers and the Chambers of Commerce in every big city of the United States. I did not succeed in accomplishing this. I did, however, go around the entire border of the country, visiting every large city and some of the central cities. I talked to engineers on the subject of organization; and I found this the general sentiment. Local problems and conditions should be the work of local societies of engineers who might even take up legislative and state or city matters. I thoroughly approve of this. The only undesirable feature is that we do not want half a dozen branches dealing separately with miscellaneous questions of public interest. We should all work together and produce what we have had in Boston recently, namely, the meeting together of the engineers representing all branches. I have been thinking why should not Boston — which is preëminent in many ways — form a stronger organization of engineers? We have one of the oldest engineering societies here, — one which represents the best in America. As I come from Kentucky that is fairly an unprejudiced view. Why should not this Society take the lead in the formation of a stronger and better engineering organization for all the engineers of New England? I firmly believe that we ought to do that as the best means of making ourselves felt. I know a great deal of nonsense is talked about the engineers, and we all know it; nevertheless, behind it is a real brotherhood of the engineer, which ought to bring us together in this Society, not as the

Boston Society of Civil Engineers — which I think has too narrow a name — but in the New England Society of Engineers. I have never brought that up before the Board of Government, because I might hesitate myself, if I were now on the Board of Government, to change the name of a society which has done so well for more than fifty years. I believe that the experience in that meeting in Chicago points to better organization in all the localities in the United States, so that we may unite behind a movement that can never succeed unless we do coöperate. That is what I want to bring here to-night, mainly to supplement what Mr. Fay has stated so admirably here. We can never succeed in anything unless we find some way by which we can speak as a unit. Could we have done that years ago? Not a bit of it, gentlemen. We opened the Engineering Building in New York with a division at the very start. That gap has closed, and at least four of the greatest of our engineering societies are now together under one roof, working together. They say the civil engineers are not on the foundation, but they are on the roof. That is the finest location of all. They may have done well to wait.

My belief and my statement I am going to reiterate. The only hope of establishing a Department of Public Works, which I believe to be an absolute necessity to the future prosperity of this country, lies in organization; and the only way that organization can be made is in the same way that our government was formed. The strength of America to-day lies in its local self-government, joined behind the great federal system. We know that perfectly well. That without the state of Massachusetts this Union would be poor, and many of the elements in it now would be lacking. Without other states our country would be poor. The day its local self-government departs, that day the Republic is in danger. I feel, then, that the engineer has and should have the opportunity for the same kind of organization that has made our country so great, and such a great power in Paris during this discussion. Whatever we may believe about the League of Nations, — whatever we may believe about certain things that have been going on in the last three or four months, — no American can help feeling intense pride

that everything in Europe seems to revolve about the American delegation, and I believe local self-government has pushed America into the finest thing in the world.

One last thing, — the formation of a strong central council does not take one whit from the educational value of our individual societies, national or local.

I want to add that it has been a great pleasure to come up here to-night. I have seen many faces that recall old friends and old times. They seem all the more like old friends as I become more distant from them. I am very glad to come back and salute you, my friends.

WALTER B. SNOW.*—I have in my hand a draft of the report of the Committee on Aims and Organization, which is merely a progress report and by no means complete. You of the Civil Engineers have a Committee on Development, and the Electrical and Mining Engineers somewhat similar organizations. We in the Mechanical Engineers have this Committee on Aims and Organization, and those of us who had the pleasure and good fortune to attend the Wernersville conference — where we had a two days' meeting of twenty-five members of the committee, from all parts of the United States — all found in it a great inspiration, primarily because of the unity of purpose displayed. We were divided into three committees, covering various aspects of our aims and organization, and met three times a day; in the morning and afternoon as individual committees, and in the evening as a joint committee. All of the questions brought before that committee were approved subject to editorial revision, and turned over to the editing committee whose report I have here in my hand.

It is very easy for a committee like ours to do what everybody quite naturally expects them to do, — pull something to pieces. It was therefore a great pleasure to find such unanimity of desire to make all our work constructive, and to stop at the point where we began to touch the *manner* of doing a thing — or, in other words, where we began to attack present methods. A good many things we touched upon were purely local in that

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they belonged to the American Society of Mechanical Engineers only, but others were of vitally mutual importance. I believe that right here in Boston the various sections and engineering interests can either keep separate and fail to accomplish the things we ought to accomplish or get together and do some great work.

A consideration of the broader aspects looking toward the advancement of the engineering profession as it concerned us in the progress of civilization brought out the necessity of research and the specific adoption of engineering standards. It was our idea that such standards might be considered as progressive and not as ultimate; and it was specifically recommended that industrial engineering be considered as a major subject for discussion at our meetings. The greater coöperation of technical societies was advocated in matters of education along different lines of engineering. This properly concerns the mechanical more than it does the other classes of engineers, particularly as regards the development of the proper type of helpful education for the subordinate of the engineer. Many of us have keenly realized the dearth of such education when we needed trained superintendents and foremen. The publications of the American Society of Mechanical Engineers are to be advanced; made broader in their scope and of more service, we hope, to the mechanical engineering fraternity at large.

One subcommittee had to do primarily with the relation of the mechanical engineer to the community, which brings us home to the vital question of the tie that will bind us in any coöperative effort. Discussion brought out very strongly that there is no use talking of what the society or a little group will do; we have got to see what the individual will do. When he does his duty as an individual we can rest secure that his section or local society will do its duty. In order to avoid confusion it was determined to distinguish between technical societies and what might be called general engineering societies, and to go far enough in the fostering of engineering solidarity to secure for the consideration of our Society the organization between local and national, through such bodies as might be developed. We did not advocate any changes in names or

any exact methods by which this should be accomplished, but did recommend that a study be made and the results published, which would present the methods adopted in different centers for bringing together the various engineering interests in one society. There are some very interesting types throughout the United States in individual states. All centered upon the thought that there should be created some agency of national character, through which coöperation between local societies could be secured for purposes of national scope, such as discussions of legislation, public works, public health and administration. Discussion of industrial relations brought out very properly that the engineer on the production and commercial side is perhaps as intimately connected with the whole industrial problem with which is concerned the labor question as is any man, and when he looks at it as he does at other questions we may hope for a sane and honest solution of the problem.

I might run on to other details, but have endeavored merely to show the lines on which we have been working and thinking, and to tell you that this report will be presented in just about a month at the Detroit meeting of the Society. How it will be received and what discussion it will provoke, remains to be seen. You can rest assured it was made with the purpose of stimulating discussion and that it is distinctly constructive in every way.

CALVIN W. RICE.*— I am very grateful to Professor Hollis, your past president and honorary member, for the splendid way in which he has suggested the coöperative idea for Boston. The tour of the United States that he made three years ago, visiting the sections of the American Society of Mechanical Engineers, is still being talked of in those sections as the event of their history. The high plane on which he spoke was an inspiration to them. It has been my privilege this year to make the same trip. To-night in Boston I complete a circuit this year made of every principal city in the United States.

The one great thing which Mr. Fay has emphasized, is the complete organization which must be made in order to put through a National Department of Public Works. I hope

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you grasp the import of what this organization means. Dr. Hollis urged that we do not undertake this by separate societies or by the separate sections of any society. We must all pull together. We must secure the coopération of the architects and the chemists and the geologists or other professional men in those sections of the United States where they are sufficiently numerous. We've essayed to go immediately to Washington and open an office and put a big movement right through the National Government. In very few cities and districts of the United States have we had any practice in handling movements where we have had to move the public will. Therefore the logic of the situation is that we must first learn how in our own homes. The uniform gospel I have been preaching through the United States, with one or two exceptions, so far as I can observe, is working one hundred per cent. I have no doubt about the few places where they are hesitating. The message is that every professional man, including the architect and chemist, should be a member of the local engineering society of his home. As he progresses in his professional and financial attainments, he then becomes a member of that national body of his specialty. The more loyal and effective he is in his local society, the presumption is the more effective he will be in his national relationship. As to the organization, — in each city my first preference is that the local society have on its board one or two men representing each of these groups of the professions. Those men should be elected by the groups in distinction from the membership at large. In that way you will give a representative character to the board. Where not desirable or not practicable to alter the existing by-laws and constitution in order to permit of this broadening of its board and the election of members by the several groups, then the other alternative is to have a joint engineering council or board.

In Philadelphia, St. Louis and Milwaukee, you will find societies that are formed along the first suggested method, — particularly in Philadelphia, where there are seven different organizations represented on the board. The other types you will find in Atlanta, Los Angeles, San Francisco, Spokane and the Minnesota joint engineering board. In the last-mentioned

places, instead of the local society being the center about which the other societies group themselves, the local society has the same representation on the joint board as other societies, or local sections of national societies. Here in Boston you have the choice; and before you can undertake to effectively put through the proposition which Mr. Fay has so ably stated, it is essential that Boston have one of the two types of organization so that we can get together. Having organized as suggested, the primary object must be public service. All of you who go to New York ought to see the extraordinary exhibition of the Roosevelt trophies, on exhibition, I believe, till June 10. As you go in you will see statements characteristic of President Roosevelt. One is, "Every man who thinks well of his country will take part in public life." Not any in this room will deny thinking well of their country, but very few take part in public life. Several ways that Mr. Fay has pointed out are open to us, and we must undertake them, and, as Dr. Hollis and also Mr. Starkweather have stated, it is probably certain that the engineer will advance in his profession in proportion as he renders service, and service means to the public good. I want to draw your attention to the address of President Kimball of the American Institute of Architects at the Nashville convention two weeks ago. He carries the idea still further, to include all of the professions as men apart from other callings. We may not practice our professions — medicine, law, engineering, architecture, painting, etc. — for the love even of our profession; we must practice our professions for the benefit which that service will render to humanity. If you carry that to a logical conclusion you will arrive, with Mr. Kimball, at the inclusion of all the professions in one common brotherhood. This is all in keeping with the topic of engineering, and I have never been more impressed with the idealism that exists in this country at this time than I am now by this movement of the engineers to put through the project of a National Department of Public Works.

At the meeting in Chicago, seventy-four societies were represented officially by delegates. It is the first time that any such organization of the profession has ever been effected.

The organization was authorized to continue in existence so long as it is necessary. They will see so many more things to do that they will keep a permanent organization. You all know that there is another organization in the United States at work practically to do the same thing, and you will find in *Engineering and Contracting*, I think for May 15, the suggestion in the editorial pages that what we have done in Chicago is competing with this other national body, and the suggestion is further thrown out that we won't do it as well. With all the idealism that has been suggested, I want you to get right down to earth on real principles. At Seattle to-day the draftsmen are members of the union affiliated with the American Federation of Labor. Every draftsman in Seattle is getting ten dollars per day; you will find certain of the school teachers of the City of New York, Salt Lake City and other cities, are members of a union affiliated with the American Federation of Labor. Now we are getting right down to business. With our idealism we have started in Chicago an organization of the engineering profession. We must form such organizations with ideals, and attract young men to them, otherwise they will drift into the type of organization where selfish motives, wages are the principal object. I want to start, if I can, in every city of the United States, a movement toward coöperation for the attainment of the higher ideals of the profession. In the mails yesterday I received letters from Denver where I spoke before a group of architects, chemists and other men. I had a letter from Mr. Ridgeway, president of the Colorado Joint Engineering Council, and Mr. Carpenter, brother of Professor Carpenter, of the Civil and Commerce Association of the city. And so on throughout the United States we are getting these bodies formed, and I hope we can get together here in Boston on some basis which will bring in all the engineers, architects and chemists and other technical professional men.

We must make the fundamental motive of all of our professional societies, in addition to the educational feature, the service of the community in which we live as citizens, for the public good.

LEONARD METCALF.* — The hour is rather late, gentlemen. I do not want to speak to you at length, but in the interest of broadening the scope of the admirable remarks which have been made to-night on this movement looking toward the establishment of a National Department of Public Works, there is one phase which I should like to bring to your attention, namely, the question of civil *versus* military control of the National Department of Public Works. I can do so in a very few words.

The situation must be faced frankly that the Engineer Corps may take the view that it could function well in this matter; that it has already done a very large amount of the public-works construction of this country; and that it certainly has a splendid reputation for accountability, in our Congress. Nevertheless, it would be unfortunate to have the public works of this country generally under the control of the military branch of the Government.

There are fundamental reasons for desiring civilian rather than military control of our public works, which in no wise detract from the honor of that able and distinguished body of engineers, — the Engineer Corps of the United States Army.

The undesirability of developing an all-powerful military autocracy or bureaucracy — the ultimate goal of which is avowedly fitness for war, the training of which is essentially military, and the development of which must be under military dominance and promotion by seniority rather than for professional and commercial ability developed under competitive struggle — is obvious.

This training, necessary for command and efficiency of coöperation at the front, tends to stifle the individual effort of the young engineer. Who does not know the discouragement of pigeonholed reports and transfer from post to post, thus denying to the young engineer the stimulating effect of seeing the realization of his hopes and work?

Army officers returning from the front are finding it difficult to adapt themselves to the present outlook in the War Department. The outlook is very uncertain. There are many prob-

* Of Metcalf & Eddy, Consulting Engineers, 14 Beacon St., Boston, Mass.

lems of organization in the new army to be met, but the whole machinery is awaiting the President. The past attitude of the Secretary of War upon the subject of universal military training in this country has not been such as to encourage one to believe that much progress will be made in this direction, at least under the present administration. Indications point to the fact that Congress may approach army reorganization from a partisan and personal rather than national standpoint.

The War Department itself has not been able to outline a definite policy acceptable to all branches of the service, due, in part, no doubt, to the jealousies between the bureaus and the field forces, a lack of proper coördination, and generous recognition of the essential character of the work of substantially all of the bureaus — at home as well as abroad. The great need is for a strong man, capable of leading men and unafraid of criticism, — a Roosevelt. Army men had hoped that General Pershing might come back in time to be of service in this matter, but the situation abroad has perhaps demanded his presence and it may be that there are many in this country who have preferred that he should remain at the front.

In war there are three sectors, or perhaps I should say three lines of defense, — the front line, the supply and transport behind the front lines, and the home industries converted to war use.

In the first of these, the Engineer Corps must be supreme; in the second, it may be aided effectively by civilian engineers.

Of the work in the third, it can best be relieved.

In times of peace, commercial considerations must control, and the country's needs will best be met by the utilization of existing agencies operating under commercial and industrial conditions and control.

The contrast between these two methods of organization and operation — the military and the civilian — is well indicated by the methods adopted on the one hand, by the U. S. Engineer Corps in the enlargement of its corps, by the very rapid promotion of its engineers and the drawing in of civilian engineers, generally underneath rather than among its own engineers; and, on the other hand, by the method of building up the personnel of the

Construction Division of the United States Army, which was charged with the building of the cantonments, camps, terminals, storage warehouses, etc., in the recent war.

The Construction Division was essentially a civilian organization, presided over by two very able regular army officers, — the one, Brig.-Gen. Richard C. Marshall, a graduate of the Virginia Military Institute, in command of the division; the other, Col. C. H. Hartman, in command of the Maintenance and Repair Department, a graduate of West Point, if I remember rightly. The personnel was drawn from engineers, engineering contractors and accountants the country over, from men in all walks of life, from men masters in their specialties, — specialists, if you will, — and not men whose chief interest and specialty centered on war. It is true that a number of men were taken from the Engineer Corps reserve officers' list, but all of these were civilian engineers who were members of the United States Engineer Corps only because they had recently offered their services to the Engineer Corps and were not yet needed for its special work.

The relations of the Construction Division to the large contracting firms of the country, to contractors generally, and its methods of procedure and accomplishment of work, were totally different from those of the Engineer Corps.

A similar difference is to be found between the work of the military engineer and the work of the civilian engineer in the past construction of large public works, such as by the Geological Survey or Reclamation Service of the United States, the additional water supply engineer corps of New York City, of Boston, Cincinnati and elsewhere.

The point of view of the professional engineer is quite different from that of the military engineer, and of the army officer trained to recognize every major as a major, every captain as a captain, alike in responsibility and duties, whose ability to command must be of primary consideration and whose skill in any specialty must be of secondary consideration; whereas in professional and commercial work, the ability of the individual as an engineer and administrator and the success won in his

professional work is the primary consideration bearing upon his fitness for the task.

So I say to you that the viewpoint is quite different, though the ability and accountability be alike.

Finally, in view of the objection, the just objection on the part of the public, to the development of an unnecessarily strong if not formidable military machine, it is well to weigh carefully the tremendous power which would be given to the military service by putting in its charge the general construction of all public works in this country.

I say this with an appreciation of the admirable work done by the Corps and with a knowledge that in times of peace perhaps from three quarters to seven eighths of this work has been public rather than military in its character, but with clear differentiation in the classes of service involved.

In making these observations the speaker deals essentially with the problem of administration of direction and control of a National Department of Public Works, rather than with the question of its personnel. He is not unmindful of the desirability of broadening the scope of experience of the young engineer of the United States Engineering Corps and of keeping him actively and advantageously employed during times of peace. It should be possible to do this by having these young engineers assigned to work in the Public Works Department from time to time and for certain periods, under the direction, however, of this Department rather than of the Engineer Corps. This plan would have the advantage of bringing these engineers into active competition in a sense with the civilian engineers drawn into the department work, which should have a stimulating effect upon both.

In view of the lateness of the hour I will not attempt to go further in telling you of the meeting which was held in Chicago, except to say one word in regard to the conference held on the last day, when the broad question of the affiliation of the engineering societies was discussed. It was very gratifying to see the very common feeling which existed there amongst many of the delegates, that if possible it would be well to use the agencies which have already been created, such as the

Engineering Council, — which certainly showed, in the conduct of this meeting at Chicago, its capacity for bringing together in an effective way different organizations for a common purpose, — rather than to create new agencies for doing the same work.

I want to suggest to you, too, a little different view from that which was expressed a few minutes ago by Mr. Rice, in regard to the necessity for a strong permanent organization of all of the societies, to accomplish the work which we are to undertake. I do not decry the effort — indeed, I think it commendable — to bring the various societies together in some sort of federation or organization which will give to the organization the power which comes of numbers. On the other hand, as I have reflected upon the success of that meeting in Chicago — and its success was undoubted — it has seemed to me that one of the fundamental things which made the meeting as harmonious and effective as it was, was the common interest in its underlying purpose. The men went there to discuss a specific subject in which they were interested. Upwards of 150 or 160 societies had been asked to send delegates. Seventy-four finally did so. The 74 delegates who came were interested, and effective action resulted. That suggests the thought, "Is it more effective to have a permanent organization of all of these engineering societies or professional associations, of one kind or another, which having shown its fitness for one task — having carried through some measure effectively — turns and looks for another task? The second task may not be of general interest to all who have taken a part in the first. May it not then be more effective to leave the routine work to be done by the existing organizations or associations, and call together, in some form of conference to discuss any question of particular interest, delegates from those associations which really are interested in that subject? Will you not in that way get the benefit of joint effort without having the difficulties resulting from the further multiplication of societies for accomplishing purposes which are more or less identical?

The moment that you attempt any work of this sort you face the financial problem — and it is a very difficult problem.

It is the most serious aspect of the situation to-day. The Committee of the Engineering Council is having difficulty in getting the necessary funds to carry forward its work. It is quite as great a difficulty as that of getting unity of action. It will be accomplished, of course; but time will be taken in its accomplishment. The question of organization must be viewed from different angles, and the idea that the speaker wishes to suggest is that the moment you attempt to get the force of large numbers you have to lower the standard of admission on which your engineering societies are based. The alternative is a loose form of federation which will admit societies with low standards of admission, as well as with high. For the purposes which you wish to make of that organization, the question of the standard of admission to the organization may not be one of controlling importance.

MEMOIR OF DECEASED MEMBER.

RUFUS MASON WHITTET.*

RUFUS MASON WHITTET, son of Alexander and Isabella (Proudfoot) Whittet, was born October 17, 1878, in Lowell, Mass., and died at Boston, Mass., on December 10, 1918. He came of Scotch ancestry, being a lineal descendant of James Whittet of Kintillo, Scotland.

He was educated in the Lowell public schools, having graduated from the Moody Grammar School in 1893, and from the Lowell High School in 1897 at the age of nineteen. Deeming it wise to further continue his academic studies, he returned the following year to the Lowell High School, taking the post-graduate course.

Mr. Whittet then passed the entrance examinations for both Harvard College and the Massachusetts Institute of Technology. Deciding in favor of Technology, he entered that institution in 1898 and graduated in June 1902, with the degree of bachelor of science in the department of Sanitary Engineering, presenting as his thesis, "A Study of the Stream Flow Records of the United States Geological Survey."

Upon his graduation from the Massachusetts Institute of Technology, Mr. Whittet joined the engineering staff of the State Board of Health, and in the wide field of work covered by that department he found employment congenial to his tastes. Taking a deep interest in its work, he soon became a most valued member of its staff, and was the principal assistant engineer of the department at the time of his death.

He was a civil engineer who believed in the elevation and dignity of his profession, and he acted on this belief with a fine enthusiasm. His principal characteristics, clear thinking and

* Memoir prepared by X. H. Goodnough and J. J. Van Valkenburgh.

sound judgment, were combined with great executive ability, and his early death ended a career begun with great promise.

Mr. Whittet was a member of the American Society of Civil Engineers, the Boston Society of Civil Engineers, the New England Water Works Association, and a prominent member of the Masonic Fraternity.

He was married in September, 1916, to Effie Osgood Byron, of Jamaica Plain, Mass., who, with a daughter, Helen Isabella, born January 16, 1918, survives him.

In appreciation of his service to the state, the State Department of Health adopted the following tribute to his memory:

"Rufus Mason Whittet, C.E., principal assistant engineer of this department, died on December 10, 1918, a victim of the prevailing influenza epidemic.

"Mr. Whittet joined the engineering staff of the State Board of Health upon his graduation from the Massachusetts Institute of Technology in 1902, and has been the principal assistant engineer of the department since 1908

"His energy, thoroughness, clear thinking and sound judgment were of invaluable assistance in the studies of water supply and drainage and the great variety of kindred problems embraced in the work of the department, while his quiet manner, his fairness and his kindness made work with him a pleasure. These qualities, with a high sense of honor and loyalty to his associates, made him respected by all and loved by a wide circle of friends."

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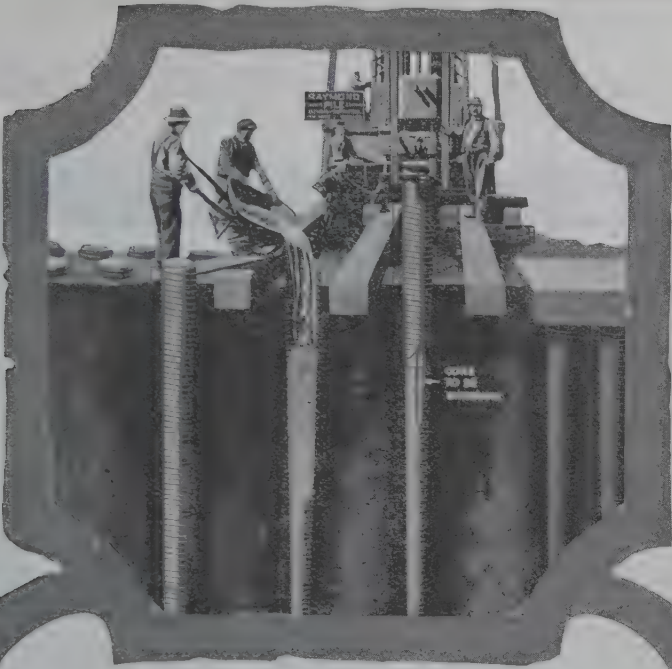
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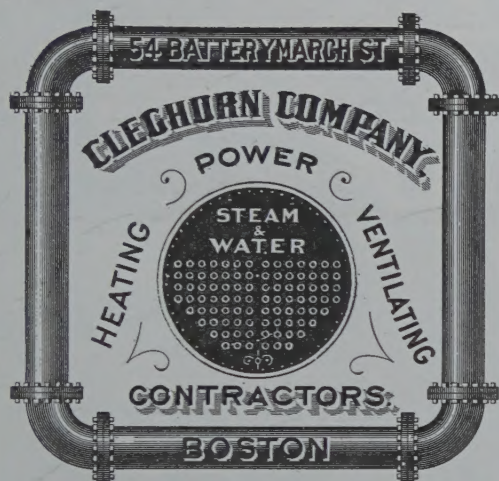
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